Hamakua Marsh Riparian Habitat Restoration Project

Submitted by:
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Hamakua Marsh Ecosystem Restoration &
Community Development Project
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Proposal Title: Hamakua Marsh Riparian Habitat Restoration Project

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Project Statement:

The goal of the Hamakua Marsh Riparian Habitat Restoration Project is to enhance ongoing recovery efforts for endangered Hawaiian waterbirds and plant species in the Hamakua Marsh Wildlife Sanctuary. The Hawaiian Waterbirds Recovery Plan (USFWS, 1978) states, "The primary reason for decline of the Hawaiian stilt, coot and gallinule has been the loss of habitat". Restoration of riparian areas within the Hamakua Marsh Wildlife Sanctuary will improve water quality within Hamakua Marsh and the adjacent Kawainui Stream, and improve the quality of habitat for endangered species recovery.

The project is part of a 10-year, $2,000,000 restoration and education project for Hamakua Marsh and the adjacent Kawainui Stream. Land acquisition and habitat restoration activities to date have protected 22 acres of wetland and stream. Removal of introduced brush and trees have created feeding, loafing and nesting habitat for native birds including the following listed species: Hawaiian stilts (*Himantopus mexicanus knudseni*), gallinules (*Gallinula chloropus sandviensis*), coots (*Fulica alai*), ducks (*Anas wyvilliana*), and the listed sedge, *Cyperus trachysanthos*.

The next phase of the project involves restoration of two acres of riparian areas adjacent Hamakua Marsh and Kawainui Stream by removal of non-native trees and shrubs, and replacement with native vegetation. Restoration of the riparian areas that filter water for the marsh will provide habitat for native plants including Milo (*Thespesia populnea*), Kou (*Cordia subcordata*), Naio (*Myoporum sandwicense*) and Aalii (*Dodonea viscosa*), and improve nesting, loafing and escape cover for federally listed Hawaiian stilts, coots, gallinules and ducks.

The project will be performed in close cooperation with the Natural Resources Conservation Service, US Fish and Wildlife Service, Kailua Urban Design Task Force, and the Hawaii Division of Forestry and Wildlife.

Need:

Today, over 30% of Hawaii's natural lowland wetlands have been filled or converted to other land uses such as agriculture and urban expansion. Oahu's windward coast wetlands are mostly small and isolated by topography and urban expansion. Most are closely associated with human communities. Long-term protection of remaining wetlands is essential to ensure protection of native Hawaiian waterbirds, flood control, ground water recharge, and aesthetic values. Hamakua Marsh and its adjacent watershed area is an urban wetland/watershed complex with intrinsic values that make it an important area for wildlife protection (including threatened and endangered species), watershed restoration, interpretation and education.

The project area is located in Honolulu County and covers 22 acres of wetland and riparian area. Hamakua Marsh lies downstream from Kawainui Marsh, the largest remaining freshwater wetland in the State (Hawaiian Waterbirds Recovery Plan, USFWS, 1978). Kawainui Stream, which runs past the project site, was the primary drainage for Kawainui Marsh as it made its way to Kaelepulu Stream, which empties into the ocean. In the early 1960's, the Army Corps of Engineers constructed a flood control levee, which cut off upstream flow from Kawainui Marsh to Kawainui Stream. Once part of an extensive system of wetlands, floodplains, fishponds and

agricultural terraces, Hamakua Marsh has become dependent upon rainfall runoff originating on an adjacent hillside currently used for livestock grazing, and a primarily flat urban watershed. The adjacent Kawainui Stream is also fed by runoff from the Hamakua hillside and urban areas, which results in poor water quality entering Kawainui Stream and subsequently, Kailua Bay. By improving the water quality originating from the hillside and adjacent urban landscapes, water quality in Kawainui Stream will improve, and help restore migratory routes for diadromous fish species such as the endemic goby *o`opu nakea* and the native shrimp *opae kalaole*. These diadromous species require early development in the ocean and later migrate into fresh waters to complete their lifecycles.

The project is expected to provide increased nesting, escape and loafing habitat for federally listed Hawaiian stilts, coots, gallinules, ducks, and numerous species of migratory shorebirds. Native wetland plants, including the federally listed sedge, *Cyperus trachysanthos*, thrive in the area. Native forest and shrub-land will replace the existing introduced tree and scrub vegetation, mitigating urban water run-off, and improving wildlife viewing and education opportunities.

The project is an opportunity to continue to develop and enhance a complex of interconnected wetlands in the area dedicated to listed species recovery, watershed management, and educational opportunities for local schools and the general public.

This project is part of an ongoing, comprehensive Kailua watershed partnership and planning effort covering approximately 20.2 square miles of mountainous forest reserve, agricultural lands, parks, urban areas, streams and wetlands. By stimulating interest and discussion within the community, the project will help to address land uses within the watershed, and mitigate water quality issues associated with modifications to the natural drainage system for the area, thereby improving endangered species recovery actions in the Hamakua/Kawainui Marsh complex.

Hamakua Marsh is designated by Governor's Executive Order as a Hawaii State Wildlife Sanctuary. The State Division of Forestry and Wildlife is committed to the long-term management the area. Management actions will include restoration and maintenance of wildlife habitat, wildlife monitoring, predator removal, vegetation control, native forest restoration, and maintenance of educational features such as trails and signs.

Objective:

The goal of the Hamakua Marsh Riparian Habitat Restoration Project is to clear two acres of introduced trees and brush in the riparian areas of Hamakua Marsh Wildlife Sanctuary and replace them with native trees and shrubs.

The State Division of Forestry and Wildlife will manage the wetland and riparian areas for the purposes of endangered species recovery, watershed protection, and native species habitat.

Expected Results and Benefits:

Restoration of two acres of riparian areas within Hamakua Marsh Wildlife Sanctuary will result in increased habitat critical to the conservation of four federally listed waterbird species on Oahu, a federally listed wetland sedge species, as well as migratory shorebirds and waterfowl.

Once the area is restored, management by the State of Hawaii Division of Forestry and Wildlife will provide protection to listed native plants and animals in the area.

Approach:

The Hamakua Marsh Ecosystem Restoration and Community Development Project will contract the clearing work for introduced vegetation, installation of a temporary irrigation system, and planting of native trees and shrubs to restore and enhance riparian habitat within the Hamakua Marsh Wildlife Sanctuary. Approximately 100 plants will be installed along 1000 linear feet of stream. Plants will include a mix of Milo, Kou, Naio and Aalii. Performance standards for one year after planting will be a continuous line of native trees and shrubs at such spacing at to insure a closed canopy upon maturity. Gaps left by tree or shrub mortality will be filled with new plants.

The Division of Forestry and Wildlife will maintain and monitor the native vegetation once installed through mechanical clearing and treating undesirable vegetation with registered herbicides used according to label instructions. All work performed in Hamakua Watershed will be through a cooperative partnership that will carefully consider best management practices per guidelines developed by the Natural Resources Conservation Service and the US Fish and Wildlife Service. The Division already works closely with counterparts in both agencies to develop methodologies and guidelines for native species protection and management, and this relationship will be continued for the Hamakua Marsh Riparian Habitat Restoration Project. The Division of Forestry and Wildlife will file annual monitoring reports.

Location:

The property proposed for restoration is located adjacent Kailua town on the Island of Oahu. The property is owned by the State of Hawaii and is zoned for conservation use.

Estimated Cost:

Contractual Services	Vegetation removal	$25,000
	Installation of drip irrigation	$1,500
Equipment	Native plant installation	$21,500
Total		**$48,000**

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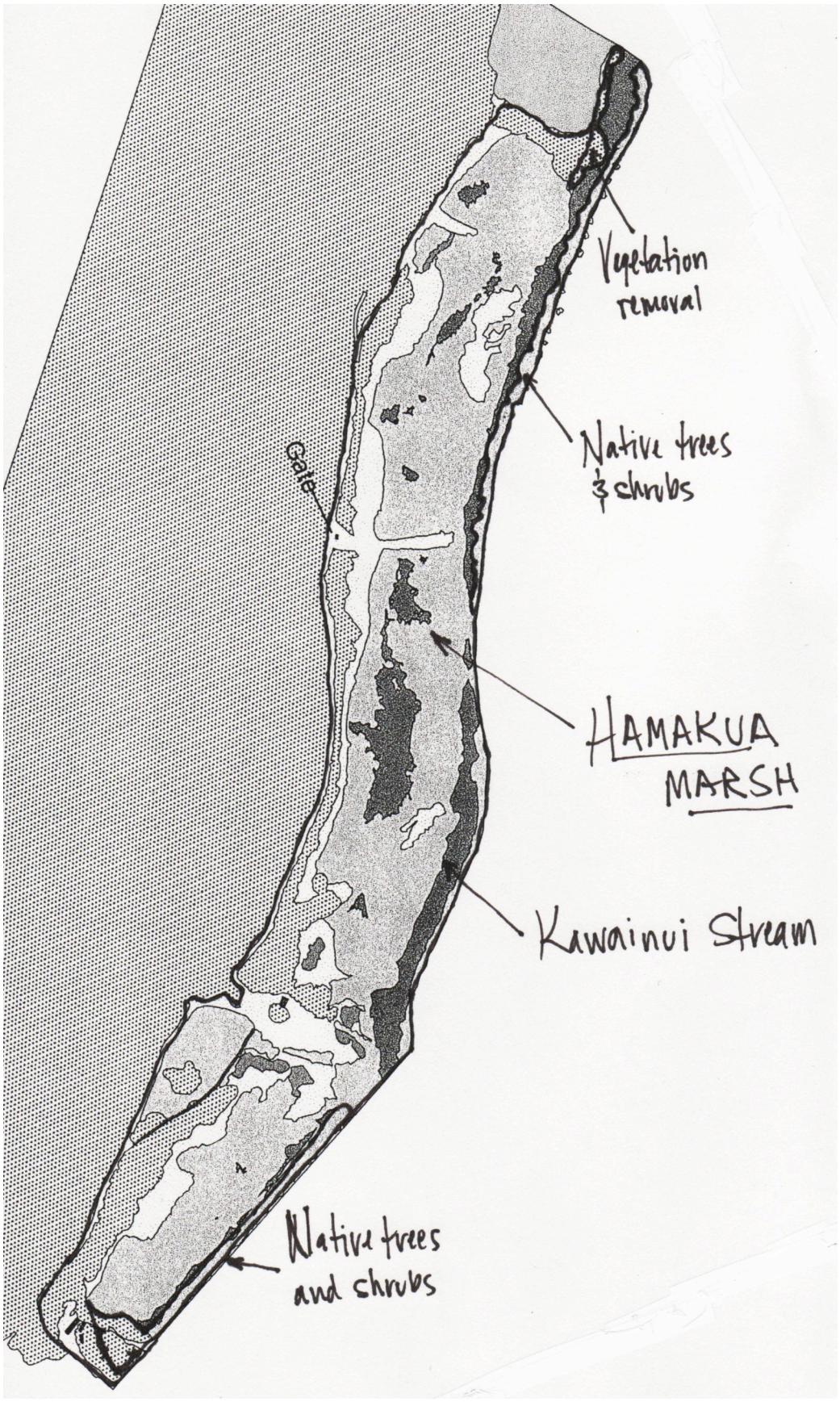
Vegetation removal
Native trees & shrubs
Gate
HAMAKUA MARSH
Kawainui Stream
Native trees and shrubs